

AMENDMENTS TO THE CLAIMS

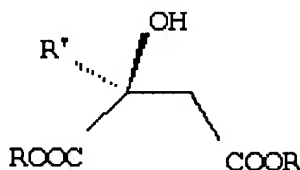
This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1. (original): A continuous process for the production of chemically pure (S)- β -hydroxy- γ -butyrolactone having desired optical activity, which comprises:

a) dissolving carboxylic acid ester derivative having the following Formula 2 in solvent at an amount of 2-50 wt%, the solvent being added with an organic or inorganic acid;

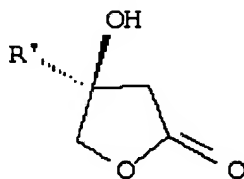
Formula 2



b) subjecting the carboxylic acid ester derivative solution to hydrogenation at 50-500 °C under a pressure of 15-5,500 psig at weight-hourly-space-velocity of 0.1-10 h⁻¹, in a fixed bed reactor charged with a metal catalyst-impregnated inorganic oxide support, a molar ratio of hydrogen to carboxylic acid ester derivative ranging from 2 to 10; and

c) recovering (S)- β -hydroxy- γ -butyrolactone having the following Formula 4 from the hydrogenation products,

Formula 4

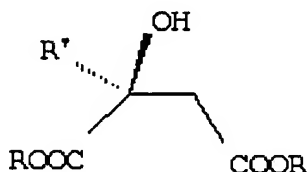


wherein R represents linear or cyclic alkyls, or aryl groups, of from 1 to 10 carbon atoms, and R' represents hydrogen or methyl.

Claim 2. (original): A continuous process for the production of chemically pure (S)- β -hydroxy- γ -butyrolactone having desired optical activity, which comprises:

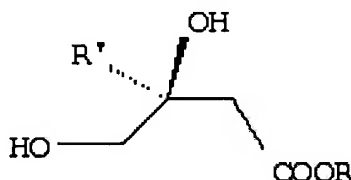
a) dissolving carboxylic acid ester derivative having the following Formula 2 in solvent at an amount of 2-50 wt%, the solvent being added with an organic or inorganic acid;

Formula 2

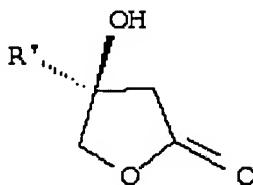


b) subjecting the carboxylic acid ester derivative solution to hydrogenation at 50-500 °C under a pressure of 15-5,500 psig at weight-hourly-space-velocity of 0.1-10 h⁻¹, in a fixed bed reactor charged with a metal catalyst-impregnated inorganic oxide support to give hydrogenation products containing an intermediate having the following Formula 3 and (S)-β-hydroxy-γ-butyrolactone having the following Formula 4, a molar ratio of hydrogen to carboxylic acid ester derivative ranging from 2 to 10; and

Formula 3



Formula 4



c) subjecting the hydrogenation products to cyclization in the presence of a solid acid catalyst, whereby the intermediate present therein is converted into (S)- β -hydroxy- γ -butyrolactone; and

d) recovering said (S)- β -hydroxy- γ -butyrolactone from the resulting products, wherein R represents linear or cyclic alkyls, or aryl groups, of from 1 to 10 carbon atoms, and R' represents hydrogen or methyl.

Claim 3. (currently amended): The process as defined in claim 1 ~~or~~ 2, wherein the metal catalyst is selected from the group consisting of nickel (Ni), palladium (Pd), platinum (Pt), rhodium (Rh), iridium (Ir), ruthenium (Ru), osmium (Os), and combinations thereof.

Claim 4. (currently amended): The process as defined in claim 1 ~~or~~ 2, wherein the metal catalyst is impregnated at an amount of 0.1-15 wt%.

Claim 5. (original): The process as defined in claim 3, wherein the metal catalyst is ruthenium (Ru).

Claim 6. (currently amended): The process as defined in claim 1 ~~or~~ 2, wherein a degree of dispersion of the metal in the catalyst is adjusted in the range of 2-50%.

Claim 7. (currently amended): The process as defined in claim 1 ~~or~~ 2, wherein the hydrogenation step is performed at 60-200 °C.

Claim 8. (currently amended): The process as defined in claim 1 ~~or~~ 2, wherein the hydrogenation step is performed under a pressure of 1,200-4,500 psig.

Claim 9. (currently amended): The process as defined in claim 1 ~~or~~ 2, wherein the hydrogenation step is carried out at weight-hourly-space-velocity of 0.2-6.0 h⁻¹.

Claim 10. (currently amended): The process as defined in claim 1 ~~or~~ 2, wherein the organic or inorganic acid additive in the solvent is added at an amount of 0.1-20 wt%, based on the solvent weight.

